PROJECT

PLAN

Real Estate Assessment Center (REAC)
Financial Assessment Subsystem (FASS-PH)

U.S. Department of Housing and Urban Development

July, 2005

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Subsystem:	FASS-PH
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Revision Sheet

Release No.	Date	Revision Description
Rev. 1	02/22/2005	Original
Rev. 2	03/02/2005	Avineon PM Revisions
Rev. 3	05/31/2005	Avineon QA Revisions
Rev. 4	06/06/2005	HUD GTM Requested Revisions
Rev. 5	07/11/2005	HUD REAC IT Requested Revisions

Project Plan Authorization Memorandum

I have carefully assessed the Project Plan for the FASS-PH subsystem. This document has been completed in accordance with the requirements of the HUD System Development Methodology.

MANAGEMENT CERTIFICATION - Please check the appropriate statement.

_____ The document is accepted.

_____ The document is accepted pending the changes noted.

_____ The document is not accepted.

We fully accept the changes as needed improvements and authorize initiation of work to proceed. Based on our authority and judgment, the continued operation of this system is authorized.

_____ _____

Freddie Harrison DATE
FASS-PH IT Project Manager

_____ _____

Nicholas Miele DATE
Business Program Manager

PROJECT PLAN

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1.0 GENERAL INFORMATION

1.0 GENERAL INFORMATION

The Project Management Plan (PMP) is intended to provide guidance on the management of the FASS-PH subsystem development project. The PMP provides a brief description of the project and identifies the project methodology. The FASS-PH project manager is responsible for this document and updates it as required to meet the project needs and HUD requirements. Updates to this document are performed in accordance with the Configuration Management Plan.

The plan is in conformance with the CMM standards in the Project Planning key process area. The software development lifecycle will comply with the guidance provided by the HUD SDM, CMM standards, and Avineon methodologies.

Purpose, Scope, and Objectives

The main objectives of the PMP are to:

- Address the project planning and management issues in the FASS-PH subsystem development project.
- Provide a project plan describing the organizational and transactional aspects of the project team
- Convey a project schedule to be followed by all team members assigned to this project and by HUD PIH-REAC to fulfill the requirements expressed in the statement of work and in our proposal. For that reason, the project schedule delineates the various tasks to be undertaken by the project team as well as the associated timeframes.

The Project Manager will be responsible for updating the Project Management Plan and other supporting artifacts to ensure the business needs of the PIH-REAC are met. Project management activities will be conducted throughout the duration of the contract, with an actual start date of April 25, 2005.

Assumptions

The initiation, planning, execution, control, and closing of the FASS-PH project will follow the guidance of the HUD SDM and Avineon's CMM Project Planning Procedure. The project will utilize these standards and tailor them to meet the requirements of the scope of the FASS-PH subsystem. Plans, policies, and processes described herein will also be compliant with HUD SDM.

System Overview

The FASS-PH is a subsystem of the Real Estate Assessment Center System (REACS). FASS-PH will help enable centralized financial analysis that can be used to identify where HUD should focus its limited resources to improve service delivery and manage its housing programs proactively. To achieve this goal, the following objectives have been identified:

- Gather standard financial data pertaining to each Public Housing Agency (PHA) and Section 8 Entity by combining standard fiscal audit information with reporting and compliance factors as defined by the Single Audit Act;
- Assess the financial condition of all PHAs and Section 8 Entities using a comprehensive protocol;
- Assess financial risk using standard financial data;

- Determine an objective, numerical score for each PHA and Section 8 Entity using standard protocols for financial performance review;
- Enable HUD staff to focus on the most troubled PHAs and Section 8 Entities based on the risk associated with the score;
- Eliminate or address existing material weaknesses identified through IG Audits. This includes mitigating potential risks;
- Support HUD's mission;
- Implement OMB Circular A-123 compliant policies and procedures;
- Support HUD's eGov Strategic Plan;
- Automate paper based forms to support the Government Paperwork Elimination Act (GPEA);
- Provide payback as early in the system lifecycle as possible;
- Provide significant benefits to HUD;
- All new functionality meets the Rehabilitation Act Section 508 requirements.

System General Environment

The following table identifies the general environment for the development of FASS-PH:

System Environment Table	
Environment	**System / Organization**
System	Real Estate Assessment Center System (REACS)
Subsystem	Financial Assessment Subsystem - Public Housing (FASS-PH)
Responsible Party Description	
Sponsor	Public and Indian Housing – Real Estate Assessment Center (PIH-REAC)
Requirements	Avineon Inc.
Design	Avineon Inc.
Development	Avineon Inc.
System and Integration Testing	Avineon Inc., DCG
User Acceptance Testing	To be determined by PIH-REAC Management
Deployment	Avineon Inc., DCG
Maintenance	Avineon Inc., DCG
System Environment, Code, and Category: and Operational Status Description	
PCAS	307820
System Code	P093
System Category	Non-Major
Operational Status	Operational
System Environment	Web Based

Contacts

The following team members are listed as the points of contact on the FASS-PH program:

Type of contact	Contact name	Department	Telephone	e-mail
Government Technical Manager	Freddie Harrison	HUD PIH REAC	(202) 475-8639	Freddie_Harrison@hud.gov
Government Project Manager	Connie Ciccolella	GSA FEDSIM	(703) 306-7688	Connie.Ciccolella@gsa.gov
Government Contracting Officer	Shelly Goergen	GSA FEDSIM	(703) 306-7802	Shelly.Goergen@gsa.gov
Avineon Contract Manager	Barbara Neal	Avineon	(703) 671-1900	Bneal@avineon.gov
Avineon Senior Project Manager	Keith Bennett	Avineon	(703) 475-8903	Keith_Bennett@hud.gov

Project References

Project Management throughout the life cycle is based on the processes defined in HUD's software development methodology, as well as on Avineon's CMM standard practices. The Project Management Plan is implemented in conjunction with the FASS-PH Configuration Management Plan, Quality Assurance Plan, and Risk Management Plan.

Reference Documents

This section lists the documents referenced in this PPQA Plan.

a. HUD Task Order Request (TOR) GSC-TFMG-05-31210
b. HUD Project Management Guidelines
c. HUD Quality Assurance Guidelines
d. HUD Software Development Methodology
e. HUD PP Template
f. FASS-PH Configuration Management Plan
g. FASS-PH Risk Management Plan
h. Avineon Quality Assurance Policy
i. Avineon PM Plan Template and Checklist
j. Avineon Software Development Plan
k. Avineon Configuration Management Plan
l. Avineon Project Plan

Relationship to Other Projects

The project management plan is a top-level document that provides guidance on the project approach for the FASS-PH development project. Additional plans that work in conjunction with the project management plan include the transition plan, risk management plan, quality assurance plan, and the configuration management plan. The processed used to document these plans are based on the processes defined in HUD's software development methodology, as well as on Avineon's CMM standard practices.

Organizational Interfaces

Avineon has built a strong project team including those with experienced leadership skills to manage and execute the project, along with a talented technical staff. The table below shows the roles and responsibilities for the project team.

Table 1

ROLE	RESPONSIBILITIES
Program Manager/ Contracts Manager	Responsible monitoring the overall progress of the FASS-PH development effort. Responsible for overall coordination of the contract with the Government.
Project Manager	Is assigned responsibility to manage a defined group of activities to meet specific system objectives tasked.
Requirements Team	Responsible for gathering requirements and ensuring they are properly documented and maintained. The group is comprised of analysts, system engineers, and developers.
Design Team	Responsible for the system design and architecture. The group is comprised of analysts, system engineers, and developers.
Development Team	Responsible for the applications development and coding. The group is comprised of analysts, system engineers, and developers.
Testing Team	Responsible for all aspects of testing, including unit , system, and user acceptance testing. The group is comprised of analysts, system engineers, and developers with a lead responsible for overseeing testing activities.
Delivery & Training Team	Responsible for final product implementation including training. The group is comprised of analysts and system engineers, with a lead responsible for providing formal training.
Configuration Management Team	Responsible for configuration management functions. The group is comprised of analysts, system engineers, and developers with a lead responsible for overseeing configuration management activities.
Change Control Board (CCB)	Comprised of a group of analysts, system engineers, and developers to review and approved suggested changes to the system configuration. Project Manager acts as the project CCB chairperson. Requires representatives from PIH-REAC to provide input and approval.
Software Quality Assurance (SQA) Team	Responsible for quality assurance functions. The group is comprised of analysts and engineers with a lead responsible for overseeing QA activities.
Risk Management Team	Coordinates risk identification, analysis, contingency planning,

ROLE	RESPONSIBILITIES
	and maintenance of potential risks. The Project Manager acts as the risk manager.

Acronyms and Abbreviations

ACRONYM/ABBREVIATION	DEFINITION
ACWP	Actual Cost of Work Performed
BCWS	Budgeted Cost of Work Scheduled
BCWP	Budgeted Cost of Work Performed
BRD	Business Requirements Document
CCB	Change Control Board
CDR	Critical Design Review
CI	Configuration Item
CIO	Chief Information Officer
CLIN	Contract Line Item Number
CM	Configuration Management
CMP	Configuration Management Plan
CMM	Capability Maturity Model
CMMI	Capability Maturity Model Integrated
CO	Contracting Office
COR	Contracting Office Representative
COTS	Commercial Off The Shelf
CPI	Cost Performance Index
CR	Change Request
CSCI	Computer Software Configuration Item
CV	Cost Variance
DB	Database
DCF	Data Collection Form
DCG	Development Coordination Group
DMM	Deliverable Management Module
DOA	Date of Award
DR	Design Review
EAC	Estimate At Completion

ETC	Estimate To Complete
EV	Earned Value
EVA	Earned Value Analysis
EVM	Earned Value Management
FASS-PH	Financial Assessment Subsystem Public Housing
FCA	Functional Configuration Audit
FDS	Functional Design Specification
FEDSIM	Federal Systems Integration and Management Center
FOIA	Freedom Of Information Act
FQR	Formal Qualification Review
GAAP	Generally Accepted Accounting Principles
GAO	Government Accounting Office
GASB	Governmental Accounting Standards Board
GSA	General Services Administration
GTM	Government Technical Monitor
HTML	Hypertext Markup Language
HUDCAPS	HUD Central Accounting Processing System
HUD OIG	HUD Office of Inspector General
HUDWeb	HUD's Intranet Web Site
ICD	Interface Control Deliverable
IG	Inspector General
IPA	Independent Public Accountant
IPR	In Progress Reviews
ISG	Internet Services Group
IT	Information Technology
IV&V	Independent Verification & Validation
JAD	Joint Application Development
LOCCS	Line of Credit Control System
LPF	Late Presumptive Failure
MF	Multi-Family
NASS	Integrated Assessment Subsystem
NDS	Non-Developmental Software
ODC	Other Direct Costs

OMB	Office of Management and Budget
PASS	Physical Assessment Subsystem
PCA	Physical Configuration Audit
PDR	Preliminary Design Review
PH	Public Housing
PHA	Public Housing Agency/Public Housing Authority
PHAS	Public Housing Assessment System
PIH	Public and Indian Housing
PM	Project Manager
PMC	Project Monitoring and Control
PMP	Project Management Plan
PNR	Problem Notification Report
PP	Project Plan
PP&O	Project Planning & Oversight
PPQA	Product &Process Quality Assurance
PR	Problem Reports
PRR	Product Readiness Review
PVCS	Product Version Control Software
QA	Quality Assurance
QAG	Quality Assurance Guidelines
QAP	Quality Assurance Plan
QASS	Quality Assurance Subsystem
RAF	Risk Analysis Form
RASS	Residential Assessment Subsystem
REAC	Real Estate Assessment Center
RM	Risk Management
RR	Requirements Review
SAC	PHAS invalidation action code
SCI	Software Configuration Item
SCR	Software Change Request
SDD	Software Design Description
SDF	Software Development File
SDL	Software Development Library

SDM	Software Development Methodology
SDP	System Decision Paper
SDR	Software Design Review
SMP	Software Measurement Plan
SOW	Statement Of Work
SPI	Schedule Performance Index
SQA	Software Quality Assurance
SR	Specification Review
SRS	Software Requirements Specification
SSDD	System/Subsystem Specification
SSR	Software Specification Review
SSS	System/Subsystem Specification
SV	Schedule Variance
SW	Software
TAC	Technical Assistance Center (formerly the Customer Service Center)
TBD	To Be Determined
TOR	Task Order Request
TOS	Tracking & Ordering System
TRB	Technical Review Board
TRR	Test Readiness Review
UAT	User Acceptance Testing
UDF	Unit Development Folder
UFI	Unique Fee Accountant Identifier
UII	Unique IPA Identifier
WASS	Web Access Security System
WBS	Work Breakdown Structure
WDDX	Web Dynamic Exchange
XML	eXtensible Mark-up Language

2.0 PLANNED ACTIVITIES, EVENTS, AND DELIVERABLES

2.0 PLANNED ACTIVITIES, EVENTS, AND DELIVERABLES

Planning

Based on the work statement provided in the Task Order Request, Avineon has developed an initial project schedule and work breakdown structure to plan for various tasks associated throughout the FASS-PH development. The Project Manager will update the project schedule to include new or updated project requirements as variances may occur due to the late transition.[1]

Estimates for each task were provided while developing the project schedule. These estimates are based on metrics obtained from similar projects of size and scope. Throughout the course of the project, actuals will be tracked against these estimates in the project plan.

The project schedule will be continually updated and maintained throughout the entire lifecycle.

Staffing

The FASS-PH project team is comprised of the project manager and a mix of developers, analysts, test engineers, and QA/CM analysts. In the first option year, Avineon proposes to add another Database Analyst due to the anticipated workload pertaining to the Oracle migration. In the following year, the Database Analyst role will be reduced, and another senior level developer will be added to assist in the increased workload and serve as a mentor in the planned Java conversion.

Staff Training

The FASS-PH project team members have the technical experience and skills to perform their assigned tasks. If additional skills are required in order to execute assignments effectively, training will be provided. During the transition period, project team members will be provided overview training on the HUD SDM and CMM procedures, which will be applied to the project. In cases where training is not required for an individual, a waiver will be issued.

Work Activities

Project tasks are outlined in the work breakdown structure. The WBS identifies the required tasks, duration estimates, resource allocations, and cost estimates in a Microsoft Project format. The WBS is submitted to HUD for approval and then base lined. The Project Manager is then responsible for updating and maintaining the WBS. Schedule, cost and resource allocations are shown in the project schedule.

Project Controls

Project controls are implemented to ensure the project progresses as expected. This project monitoring and control is provided through the reviews, audits, reports, and working interchanges established for the program. The key factors that contribute to project management processes are planning, scheduling, performance measurement, risk mitigation, variance analysis, and corrective action. The Project

[1] The anticipated start date for this project was April 1, 2005. The actual start date for this project was April 25, 2005. This loss of time coupled with an insufficient transitional phase may result in schedule changes.

Manager develops detailed plans based on established work assignments for specific projects. Tools are used to document and track the work against major program milestones and provide work performance measurement against costs incurred. To ensure the necessary level of tracking and oversight for the application, a Software Measurement Plan (SMP) will be developed in accordance with the Software Project Monitoring and Control (PMC) Process and through the tailoring of the Software Measurement Plan Template. The measurement plan includes periodic reviews, monthly status reports, and audits. Periodic reviews are also conducted to assess the risks, to initiate risk analysis, and to establish risk mitigation methods. Product and Process Quality Assurance's (PPQA) function is to ensure that these transactions are fully recorded and traceable though the program life. Deviations from the base lined cost and schedule data are subjected to variance analysis. Corrective action items are documented for each significant variance. Corrective action items are established, logged and tracked until successfully resolved. Directives are issued through the formal planning, scheduling and communications media.

Requirements Control

The Requirements Team is responsible for the requirements management process for the FASS-PH development project. The requirements team will develop a requirements management process, and will establish the overall schema for managing those requirements. The requirements management process will apply guidance from the HUD SDM – Initiate Phase as well as the CMM Requirements Management process area. The requirements team will enable and assist project team members in entering requirements data into the requirements tool, and will produce requirements traceability matrices.

The Project Manager will ensure the integrity of the requirements data and that requirements traceability matrices are built for each major document (such as Software Requirements Specification (SRS) or Software Design Description (SDD). As traceability matrices are produced, the projects will be able to determine whether all requirements for each phase have been met.

Schedule Tracking

Project progress is monitored and tracked with actual data generated at the task level and compared to the proposed schedule. Reports are generated that provide data on performance-to-date and projected future performance. In addition, deviations of both current and future milestones from proposed milestone dates are flagged. The actual start dates, completion dates, task completion percentages based on earned value algorithms, and actual dollar amounts expended on each task are entered into the Microsoft Project plan for each task and the project overall.

Schedule Performance Reports

Schedule status information is measured against the required schedule dates, and reports on performance-to-date and projected future milestone dates are made. Deviations of "to-date" and "future-milestone-dates" from "required-dates" are flagged. Using MS Project for each CSCI, the Administrative Office generates variance analysis reports by comparing Actual Cost of Work Performed (ACWP), Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Estimate at Completion.

Schedule Reviews

QA reports and Configuration Management (CM) status accounting reports are reviewed in relationship with the schedule performance reports at multiple detail levels and timing intervals to provide management early visibility into potential schedule problems and/or schedule risks.

At each review, schedule problems and/or risks are identified. If an actual problem (schedule variance) occurs, a problem resolution analysis is made and includes: problem severity, schedule impact, possible resolutions, and risk associated with each alternative. The Project Manager directs corrective action or recommends corrective action to a higher authority level.

Progress Variance Monitoring and Resolution

Actual progress can differ from the planned progress for many reasons. The Project Manager has the responsibility to identify schedule deviation causes and trends at the task level and correct the deviations within his or her authority realm. Deviations that are beyond the Project Manager's capabilities to resolve are escalated to the Program Manager's attention.

Once a schedule variance is identified and quantified, management has several options from which to choose for deviation resolution. Depending on the cause for the deviation, the action may be resource reallocation, reschedule the task or set of tasks, or correct a performance problem. This resolution will be presented to the HUD COTR/GTM for discussion and concurrence.

Quality Control

The PPQA function provides the Project Manager with the assurance that all quality and production control requirements are being accomplished. PPQA also provides oversight for the conduct of audits and reviews to assure that all performance and contractual requirements are met and integrated into the Operational Baseline. In performing these duties, PPQA monitors adherence to all applicable policies, processes, procedures and plans. PPQA functions will be performed in accordance with the Quality Assurance Plan.

Reporting and Communication

Communication is an essential element to a successful project. The Project Manager is responsible for providing an effective communication plan and means for reporting both to upper level management and the project team. The following paragraphs define the management plan for enabling communication for project coordination.

Status Reporting

Project Status reports will be submitted to the HUD COTR/GTM on a monthly basis. Status reports will provide detailed information on the progress of the project compared to the work plan and project schedule. Specifically, the monthly status report will include:

a. Task order Information

b. Development Cost

c. Deliverable Status

d. Changes to Personnel

e. Earned Value Analysis

f. Comments

The Project Manager will submit the report using HUD standard templates.

Meetings

Project meetings will be required throughout the project lifecycle. This may include, but is not limited to, requirements workshops, design reviews, and team status meetings. All project meetings will have an agenda and minutes for each meeting will be documented. Meeting agendas and minutes will be stored and maintained in a centralized repository for reference.

Avineon will also conduct In-Progress Review (IPRs) meetings on a monthly basis. The meeting will include the HUD COTR/GTM, FEDSIM Project Manager, Government Contracts Manager, Avineon Contracts Manager, Avineon Project Manager, and any required technical team members. During the meeting, the following topics will be reviewed:

- Task Review and schedule/Action Items Past and Future
- Review by Task
- Schedule by Task
- Previous Months Activities by task
- Planned Activities for next month by task
- Incurred (not billed) costs
- Earned Value Reporting
- Issues
- Summary

Metrics Collection

In order to fully understand the overall success of a project, metrics must be collected and analyzed. The Project Manager is responsible for determining the standard measurements to be collected by task areas within the FASS-PH development project. Measurement requirements specific to each build will be defined and will be combined as the project's overall measurements for analysis. Sample measurements that may be collected include:

- Schedule Variance
- Cost Variance
- Effort (hours, resources) expended on tasks
- Percent complete, and funds expended for each task for tracking in the Project Plan
- Earned Value
- Number of needed and completed corrective actions
- Number and types of reviews held
- Number and type of defects found and resolved
- Open issues remaining

- Number of open recommendations
- Peer review results
- Defect containment by life cycle phase
- Number of risks identified, tracked, controlled and retired
- Dates, effort, and costs of each risk assessment
- Occurrence of unexpected risks

Risk Management

During the project-planning phase, a risk management plan is developed. The Project Manager assumes the responsibility to ensure that project risks are identified, analyzed and tracked to minimize probability of occurrence. Potential risks are reviewed and monitored on a continual basis, with preventive and contingency plans developed. The risk management plan follows the standards and guidance of the risk management process.

DELIVERABLES

The Project Manager will submit the deliverables during each phase of the lifecycle. During the initial project-planning phase, deliverables may include, but not limited to, the Project Management Plan, Risk Management Plan, Quality Assurance Plan, and Configuration Management Plan. The following table identifies required deliverables for Release 8.1, Release 8.2 (Option), and Release 8.3 (Option).

Release 8.1

SOW Reference	Phase	Deliverables	Date Due
C.4.1	**Planning** Project Initiation/Planning Requirements Definition	Final PMP (throughout task order)	10 Business days from DOA; updated monthly or as requested by Government
C.4.1	**Planning** Project Initiation/Planning Requirements Definition	Progress Reports (throughout task order)	15th Business days from DOA
C.4.1	**Planning** Project Initiation/Planning Requirements Definition	Problem Notification Reports (throughout task order)	As needed
C.4.2	**Planning** Project Initiation/Planning Requirements Definition	Updated Risk Management Plan (throughout task order)	10th calendar day each month

		Update Need Statement Update Feasibility Study Update Risk analysis Update Cost/Benefit Analysis Update System Decision paper	10 Business days from DOA
C.4.3	**Development** System Design Development/Perfective Maintenance System Integration and Testing Installation and Deployment	Functional Requirements Document Data Requirements Document System Support and Acquisition Plan System Security Plan	50 Business days from DOA
		System/Subsystem Specification Database Specification Program Specification Validation & Verification Plan Training Plan	100 Business days from DOA
C.4.4		Maintenance Manual Operations manual Test Plan User's Manual Installation & Conversion Plan	130 Business days from DOA
C.4.3		Software Developed and Implemented Test Scripts/Release Notes	165 Business days from DOA
C.4.5		Interface Control Deliverable (ICD) (throughout task order)	165 Business days from DOA
C.4.5		Test Results & Evaluation Reports (throughout task order)	180 Business days from DOA
C.4.4.3		Post Implementation Support	190 business days from DOA
C.4.6		Training Plan (throughout task order)	100 Business days from DOA

Release 8.2

SOW Reference	Phase	Deliverables	Date Due
C.4.1	**Planning** Project Initiation/Planning Requirements Definition	Update Need Statement Update Feasibility Study Update Risk analysis Update Cost/Benefit Analysis Update System Decision paper	10 Business days from Days After Completion of Release 8.1 (DAC8.1)

C.4.3	**Development** System Design Development/Perfective Maintenance System Integration and Testing Installation and Deployment	Functional Requirements Document Data Requirements Document System Support and Acquisition Plan System Security Plan	30 Business days from DAC8.1
		System/Subsystem Specification Database Specification Program Specification Validation & Verification Plan Training Plan	60 Business days from DAC8.1
		Maintenance Manual Operations manual Test Plan User's Manual Installation & Conversion Plan	90 Business days from DAC8.1
		Software Developed and Implemented Test Scripts/Release Notes	110 Business days from DAC8.1
C.4.6		Test Results & Evaluation Reports	120 Business days from DAC8.1
C.4.4.3		Post Implementation Support	125 business days from DAC8.1

Release 8.3

SOW Reference	Phase	Deliverables	Date Due
C.4.1	**Planning** Project Initiation/Planning Requirements Definition	Final Project Plan	5 Business days from DAC8.2
		Update Need Statement Update Feasibility Study Update Risk analysis Update Cost/Benefit Analysis Update System Decision paper	10 Business days from DAC8.2
C.4.2	**Development** System Design Development/Perfective Maintenance System Integration and Testing Installation and Deployment	Functional Requirements Document Data Requirements Document System Support and Acquisition Plan System Security Plan	30 Business days from DAC8.2

		System/Subsystem Specification Database Specification Program Specification Validation & Verification Plan Training Plan	60 Business days from DAC8.2
		Maintenance Manual Operations manual Test Plan User's Manual Installation & Conversion Plan	90 Business days from DAC8.2
C.4.5		Software Developed and Implemented Test Scripts/Release Notes	110 Business days from DAC8.2
C.4.6		Test Results & Evaluation Reports	120 Business days from DAC8.2
C.4.4.3		Post Implementation Support	125 business days from DAC8.2

As required, the Project Manager will be responsible for entering the data in to HUD's Deliverable Management Module. This Lotus Notes based system will track deliverables the deliverables with the time and date of submission.

All deliverables will be in a format consistent with HUD Standards. The deliverables will be in electronic form, and/or provided in a hard copy format, as required by PIH-REAC.

SUPPORTING PROCESSES

Configuration Management

The Configuration Management process will be monitored to ensure that defined processes are practiced in accordance with our documented configuration management guidelines. A separate Configuration Management Plan will be developed.

Documentation

All documentation developed under the FASS-PH project will be subject to the HUD requirements stated in HUD's Software Development Methodology (SDM). The following table lists the types of documentation that will be required for the project and the associated template from the HUD SDM. This template will be the basis of the documentation.

Document Type	HUD SDM and Avineon ISDLCM Template	Peer Review Type
Project Management Plan	HUD PMP Template and Checklist	Formal Inspection
Configuration Management Plan	HUD CM Plan Template and Checklist	Formal Inspection
Quality Assurance Plan	HUD QA Plan Template and Checklist	Formal Inspection
Risk Management Plan	HUD Risk Analysis Template and Checklist	Formal Inspection
Master Schedule (Microsoft Project)	Avineon MS Project Schedule Template	Technical Review
Transition Plan	HUD Conversion Plan Template and Checklist	Formal Inspection
Training Plan	HUD Training Plan Template and Checklist	Technical Review
Software Requirements Specifications	HUD Functional Requirements Doc and Checklist, HUD Data Requirements Doc and Checklist	Formal Inspection
Requirements Traceability Matrix	Avineon Requirements Traceability Matrix Template	Technical Review
Software Design Description	HUD Design Spec Template, HUD Database Spec Template, HUD Program Spec Template and Checklist	Technical Review
Software Development Folders with code and unit tests (2 required – one per CSCI)	HUD Project Defined	Walkthrough
Software Test Plan	HUD Verification, Validation and Test Plan Template and Checklist	Formal Inspection
Software Test Procedures (2 Sets – One per STD)	Avineon Test Procedure	Walkthrough

Document Type	HUD SDM and Avineon ISDLCM Template	Peer Review Type
Integration Test Plan	HUD Test Plan Template and Checklist	Walkthrough

Software Quality Assurance

A separate quality assurance plan is developed to define the Software Quality Assurance (SQA) tasks and responsibilities for the HUD FASS-PH system development activities. The SQA Plan provides guidance on how Avineon's quality policy will be implemented with the objective of a defect-free system delivered on time and within budget.

Reviews and Audits

QA Reviews and audits will be performed in accordance with QA Plan. Both reviews and audits may be conducted on a scheduled or unscheduled basis. In addition, the Project Manager may plan and conduct management reviews to brief the Government on the results of these reviews and audits. The reviews are to keep customer informed about project issues, new findings, technical considerations, and the overall status of evolving system products. Activities would include, but not limited to, those listed below:

a. Brief review and audit findings

b. Resolve issues.

c. Arrive at agreed-upon mitigation strategies for near- and long-term risks

d. Identify and resolve management-level issues and risks

e. Obtain commitments and approvals needed for timely resolutions of QA issues.

Problem Resolution

In order to quickly resolve issues that may arise, a Problem Notification Report (PNR) will be provided for any problems that may jeopardize the technical performance, costs, or schedule, as presented in the PMP. Avineon will utilize the PNR form provided by the Government. These problems and deficiencies will be communicated to the HUD COTR/GTM for review.

The Project Manager will be responsible for maintaining these issues to ensure they have been addressed and corrected. To support the resolution of critical issues that may impact the operational readiness of the system, a Technical Review Board (TRB) will be established. The TRB, chaired by the Project Manager or an appointed line manager, is responsible for addressing the key project issues that impact the system's ability to meet specified requirements. The TRB will assist, as directed, in ensuring that planning, development, and acquisition of computer resources comply with established HUD policy, procedures, plans and standards. The TRB also provides technical support to the CCB.

The CM, QA, and the Test and Evaluation Group shall be responsible for providing a representative to the TRB. The representative's responsibilities are listed below:

a. Attend all TRB meetings.

b. Provide draft project artifacts, as tasked to the member, at a specified period prior to the TRB meeting where it will be discussed.

c. Update, release, and control technical memoranda reflecting the TRB decisions to the group the member represents.

Subcontractor Management

The Avineon Team currently includes 2 subcontractors: The Mil Corporation, and Future Technologies Inc. Avineon will execute its subcontract management policies and procedures, enabling a more efficient subcontractor management process. The acquisition and monitoring of required subcontractor support is administrated in accordance with the subcontract management process. The process establishes the requirement for contractor management activities.

The Contract Manager will be responsible for monitoring the subcontractor to ensure a seamless and integrated team and work products. The Contract Manager understands and has experience in organizing, directing, coordinating, and planning contract support activities The Project Manager is responsible for monitoring the work conducted by subcontractors on a daily. Periodic technical reviews are also scheduled between Project Manager and subcontractor.

3.0 RESOURCES

3.0 RESOURCES

Roles and Responsibilities

The following describes the functional groups that influence and control software quality.

a. Program Manager is responsible for the following items:

   1. Establishing a quality program by committing the project to implement quality standards and methodologies based on CMM and HUD methodologies.
   2. Reviewing and approving the PPQA Plan applied to the FASS-PH subsystem development.
   3. Resolving and following-up on any quality issues raised by PPQA.
   4. Identifying an individual or group independent from the project to audit and report on the project's PPQA function.
   5. Identifying the quality factors to be implemented in the system and software.

b. Project Manager is responsible for:

   1. Implementing the quality program in accordance with Avineon's PPQA policies, procedures, and guidelines as well as HUD's QA policies, procedures, and guidelines.
   2. Identifying the PPQA activities to be performed by PPQA.
   3. Reviewing and approving the FASS-PH PPQA Plan applied to the FASS-PH subsystem development.
   4. Assisting the Program Manager in the identification and funding of an individual or group independent from the project to perform the PPQA functions.
   5. Resolving and following-up on any quality issues raised by PPQA.
   6. Identifying and ensuring the quality factors to be implemented in the system and software.
   7. Identifying, developing and maintaining planning documents such as the Project Management Plan, Test Plans, and this PPQA Plan.

c. Project Team (Requirements Analysts) is responsible for:

   1. Reviewing and commenting on the FASS-PH PPQA Plan.
   2. Implementing the quality program in accordance with this PPQA Plan.
   3. Resolving and following-up on any quality issues raised by PPQA related to software development activities.
   4. Identifying, implementing, and evaluating the quality factors to be implemented in the system (software and hardware).
   5. Implementing engineering practices, processes, and procedures as defined in Avineon's CMM-based standard Technical Solution Procedure, Requirement's Development Procedures, Requirement's Management Procedures and HUD's Software Development Methodology.

d. Project Team (Software Developers) is responsible for:

   1. Reviewing and commenting on the FASS-PH PPQA Plan.

2. Implementing the quality program in accordance with this PPQA Plan.
3. Resolving and following –up on any quality issues raised by PPQA related to software design and development.
4. Identifying, implementing, and evaluating the quality factors to be implemented in the software.
5. Implementing the software design/development practices, processes, and procedures as defined in Avineon's Software Development Procedures and HUD's Software Development Methodology.

e. Project Team (Software Test Engineers) is responsible for:

1. Reviewing and commenting on the FASS-PH PPQA Plan.
2. Implementing the quality program in accordance with this PPQA Plan.
3. Resolving and following-up on any quality issues raised by PPQA related to software test.
4. Verifying the quality factors are implemented in the system, specifically software.
5. Implementing the software test practices, processes, and procedures as defined in Avineon's Integration and Test Procedures and HUD's Software Development Methodology.

f. Project Team (CM Analysts) is responsible for:

1. Reviewing and commenting on the FASS-PH PPQA Plan.
2. Implementing the quality program in accordance with this PPQA Plan.
3. Resolving and following-up on any quality issues raised by PPQA related to CM.
4. Ensuring the quality factors are implemented in the software related to CM.
5. Implementing the CM practices, processes, and procedures as defined in Avineon's Configuration Management Policies and Procedures and HUD's Software Development Methodology.

g. Project Team (IV&V Analysts) is responsible for:

1. Reviewing and commenting on the FASS-PH PPQA Plan.
2. Implementing the quality program in accordance with this PPQA Plan.
3. Resolving and following-up on any quality issues raised by PPQA.
4. Verifying the quality factors are implemented in the system (hardware and software).
5. Implementing the practices, processes, and procedures as defined in Avineon's Validation and Verification Procedures and HUD's Software Development Methodology.

Labor Categories

Labor categories to be used for duration of this project are as follows:

NUMBER OF RESOURCES	LABOR CATEGORY
1	Project Manager
1	Senior Systems Analyst/Programmer
2	Senior Developer
1	Senior Database Programmer/Analyst
1	Systems Analyst/Programmer
2	Developer
1	System Test Engineer
1	QualityAssurance Manager [2]

Budget Estimates and Total Costs

Cost Management and Control

Avineon creates a project budget and closely monitors all costs against this budget. Using Avineon's DCAA approved accounting system, the Project Manager is able to generate multiple reports against the project task number. This will allow the Project Manager to monitor and control project costs.

Once a valid cost baseline is established, detailed schedules are developed to be the basis for establishing the cost of work performed. This analysis is reviewed monthly to establish measurement points for cost and schedule adherence. To ensure immediate and appropriate attention to cost and schedule variances, triggers are automatically generated for review in the integrated review process.

Cost Management

Management of costs and risks is a focal point of the cost adherence plan. A comprehensive set of processes, tools, and practices are coupled with contingency planning to ensure that costs and risks are closely monitored and controlled.

[2] Quality Assurance Manager tasks are divided between the FASS-PH and Physical Assessment Subsystem (50%)

Cost Control

Cost management methodology utilizes tools to track and measure the cost of work being performed. Deviations are highlighted for immediate management attention. The Project Manager employs input in the form of cost and completion percentages via monthly management reports to develop a BCWP. This is a measure of budget adherence that is used to determine where management attention must be focused.

Cost Variance Measurement

At the start of a project, or a baseline revision, WBS levels are entered into a Microsoft Project plan and in turn baselined to form the framework for cost-variance measurement.

Milestones are monitored, and noted variances are reviewed to determine program impact and establish corrective action items. Corrective action items are tracked to completion. Out-of-tolerance variances are assessed by the Project Manager and reviewed with the Program Manager. Internal cost and schedule reviews are held for the duration of the effort. Reviews assess cost trends and analyze cost and schedule variances, with variances determined by comparing elements of BCWP against ACWP and BCWS. If a variance reaches a predetermined threshold, as defined in the risk management database, it is brought to the immediate attention of Project Manager for assessment and formulation of corrective action. Threshold limits are set by the Project Manager and documented in the related risk management database entries and adjusted, as appropriate, based on trend analysis and risk identification. Variances, either positive or negative, are automatically triggered and raised for analysis.

Cost Variance Corrective Action

Periodically, the Project Manager conducts a formal program review to communicate costs, schedule and status. Variance are graphed and utilized to describe specific cost variances (positive or negative) that are greater than Project Manager's established thresholds for the task-to-date. For each variance, the Project Manager either approves the recommended corrective action or directs that further analysis/planning is to be done and reported on within a week. In this manner, all cost variances are immediately acted upon before they are allowed to become significant.

Once a variance has been identified and quantified, the Project Manager has a number of options for corrective actions.

In all cases, the Project Manager maintains total control over the resolution of the problem. If either the problem or the corrective action taken constitutes a program risk, the risk is quantified, minimized as much as possible, added to the list of potential risks along with its contingency actions.

It is possible that some cost issues cannot be resolved with the existing project resources. If necessary, the Project Manager may draw upon Avineon's other resources. The Project Manager will have Avineon's corporate management support to draw upon additional resources.

Subcontractor Cost Control

Cost management practices for subcontractors include formal methods for monitoring and controlling subcontractor cost performance and minimizing risk. Specific tasks are identified and are detailed in the Microsoft Project plan. Enforced flow-down of technical, schedule, and contractual requirements are incorporated into individual work statements. Subcontract management has been given the dual responsibility of ensuring that 1) lines of communication remain open for the exchange of information and 2) negotiated agreements are not compromised.

The FASS-PH development project uses a review and reporting system that requires subcontractor evaluation and is consistent with contracting requirements. A monthly subcontractor's status report including any variances in cost, schedule, or technical performance will be included in the monthly status reports and program reviews provided to HUD. This will ensure management visibility and to guarantee that proper and prompt attention is given to risk management and reduction on a program-wide basis.

The Project Manager manages the subcontractor costs directly, and is chartered with the responsibility of monitoring subcontractor costs and schedule for adherence to budget. The Project Manager reports directly to Program Manager, thus ensuring that immediate insight into all subcontractor cost control occurs.

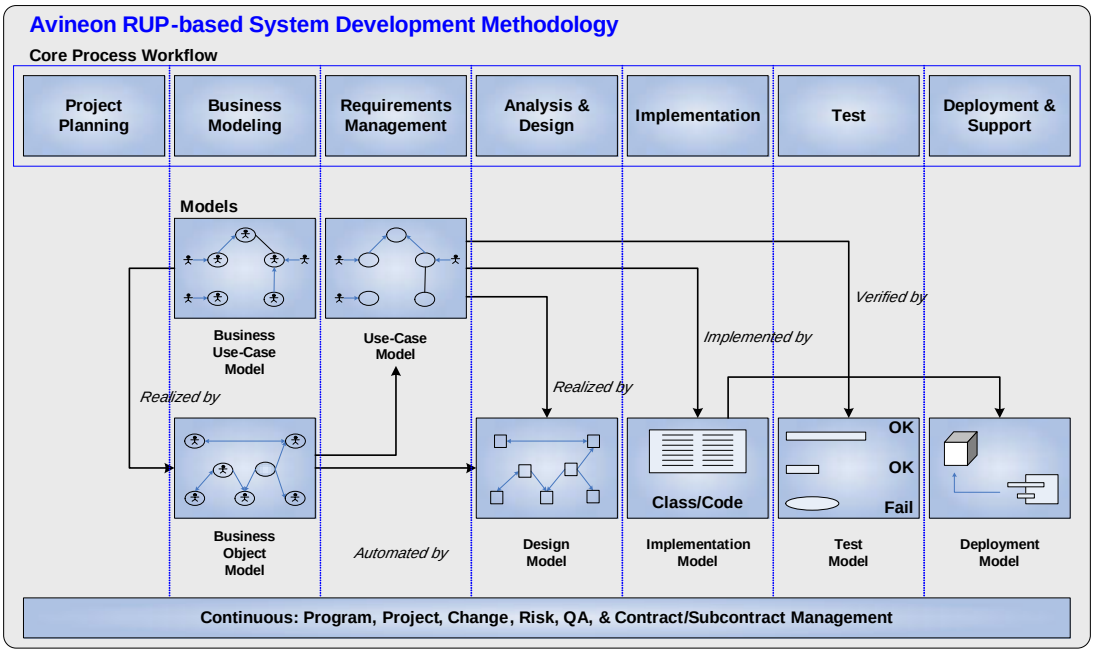
4.0 TECHNICAL APPROACH

4.0 TECHNICAL APPROACH

TECHNICAL PROCESS

Process Model and Methodology

Avineon's software development methodology is based on the Rational Unified Process and tailored to meet Avineon's organizational needs as well as CMM standards and guidelines. The figure below shows the phases of the technical approach to the FASS-PH development project. The HUD SDM follows a similar methodology. Avineon will utilize the standards and guidelines defined by HUD and interject any additional tasks that would benefit the project.



Tools and Techniques

By following HUD's SDM, and Avineon's CMM based technical methodologies, a standard repeatable process is utilized to ensure quality products. Avineon uses many different tools throughout the development lifecycle, including Rational Requisite Pro for requirements management, Rational Rose for use case modeling and design, and ClearCase for configuration management, just to name a few. Avineon will work with HUD to examine their existing tools such as PVCS, to determine if they are the most appropriate tools for their needs.

Product Acceptance

Various testing cycles are conducted before the product is submitted for acceptance testing. The User Acceptance Testing (UAT) is the HUD user approved series of tests that demonstrate compliance with

the system level requirements. The UAT is the acceptance mechanism for the developer's compliance with the terms of tasking by the Customer.

The UAT consists of complementary and progressive test phases. A UAT Test Plan will be generated to address the planning for all levels of UAT. A Test Description will be generated for each component, documenting the test procedures to be run to verify each requirement for that component. A cross-reference matrix will be provided, using the project-wide requirements traceability database, to document the test or tests that satisfy each requirement. A system-level Test Report will be generated for each component, documenting the results of each component test.

APPENDIX A PROJECT SCHEDULE

The initial FASS-PH project schedule is embedded below. It is important to note that the Project Schedule is a "living document". That is, the Project Schedule is subject to change, as circumstances deem necessary.

Double click on graphic to access the WBS.

Table 2 FASS-PH Initial WBS

ID		May 29, '05							Jun 5, '05							Jun 12, '05							Jun 19, '05					
		S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F
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APPENDIX B LESSONS LEARNED REPORT OUTLINE

LESSONS LEARNED

Project Retrospect	
Date:	
Project Name:	
Project Manager:	

Lessons Learned (Check all that apply) To activate box, click twice, select checked			
PM Processes	**PM Knowledge Areas**		**Product Delivery Process**
☐ Initiating	☐ Scope	☐ Risk	☐ Requirements
☐ Planning	☐ Quality	☐ Procurement/Contract	☐ Design
☐ Executing	☐ Time	☐ Human Resources	☐ Development
☐ Controlling	☐ Cost	☐ Communications	☐ Deployment
☐ Closing			☐ Other

Lessons Learned Retrospect		
Indicate if lesson(s) learned described above should be avoided or repeated on future projects:	☐ Avoid	☐ Repeat

Description / Comments Tab inserts next row
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